

Top view of a circular device. The device features a central core with four dots, surrounded by concentric rings and radial segments. Key labels include:

- 3C(P3)**: A radial segment in the upper right quadrant.
- MG** and **MS**: Labels pointing to a dashed line and a small rectangular feature, respectively, in the upper right quadrant.
- 3D(P4)**: A radial segment in the right quadrant.
- 2b2** and **2b1**: Labels pointing to the outer and inner rings of the right quadrant, respectively.
- 3A(P1)**: A radial segment in the lower right quadrant.
- CL**: A label pointing to the central core.
- 2a** and **2b**: Labels pointing to the outer and inner rings of the lower left quadrant, respectively.
- 3B(P2)**: A radial segment in the left quadrant.
- C**: A label pointing to the outermost dashed circle.

 A coordinate system is shown in the bottom left corner with axes labeled **x**, **y**, and **z**.

The figure consists of two parts. The left part is a 3D schematic of a wheel. A coordinate system is defined with the x-axis pointing vertically upwards, the y-axis pointing horizontally to the right, and the z-axis pointing into the page. Forces are shown as follows: F_x is a downward arrow on the x-axis; F_t is a curved arrow around the x-axis; F_y is a rightward arrow on the y-axis; and F_z is a downward arrow on the z-axis. The wheel's radius is labeled $2a$ and its half-width is labeled $2b$. An arrow labeled "Traveling direction" points to the left. The right part is a top-down view of the contact patch, which is an ellipse. A coordinate system is defined with the x-axis pointing upwards and the y-axis pointing to the right. Four points are marked on the ellipse: P_1 at the bottom, P_2 on the left, P_3 at the top, and P_4 on the right. The text "Wheel plane" is written near the top right of the ellipse.

FIG.2

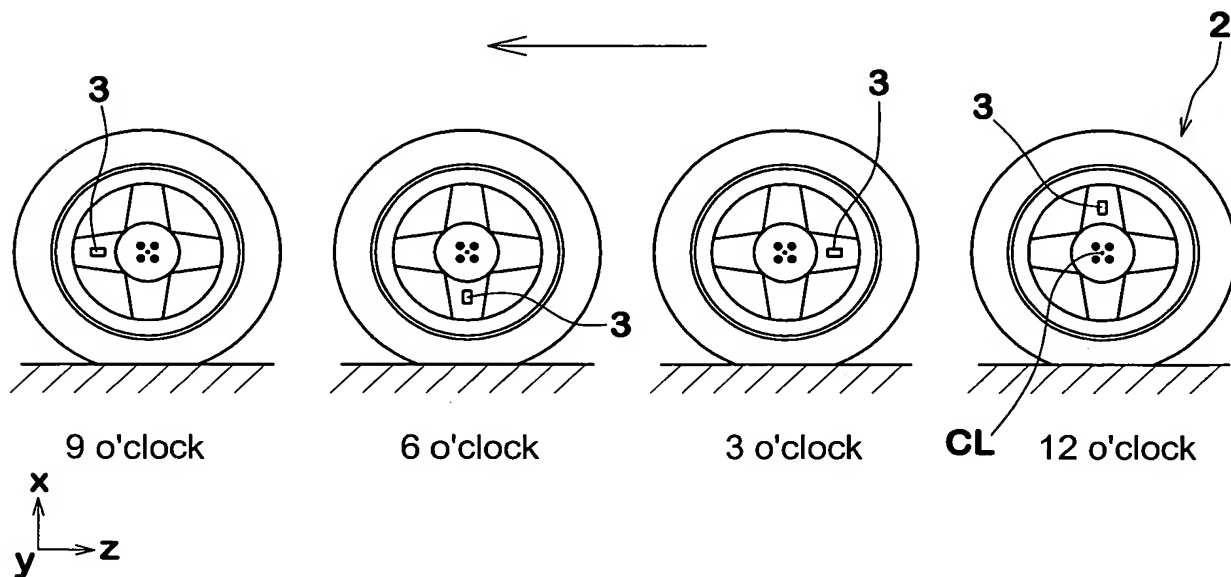
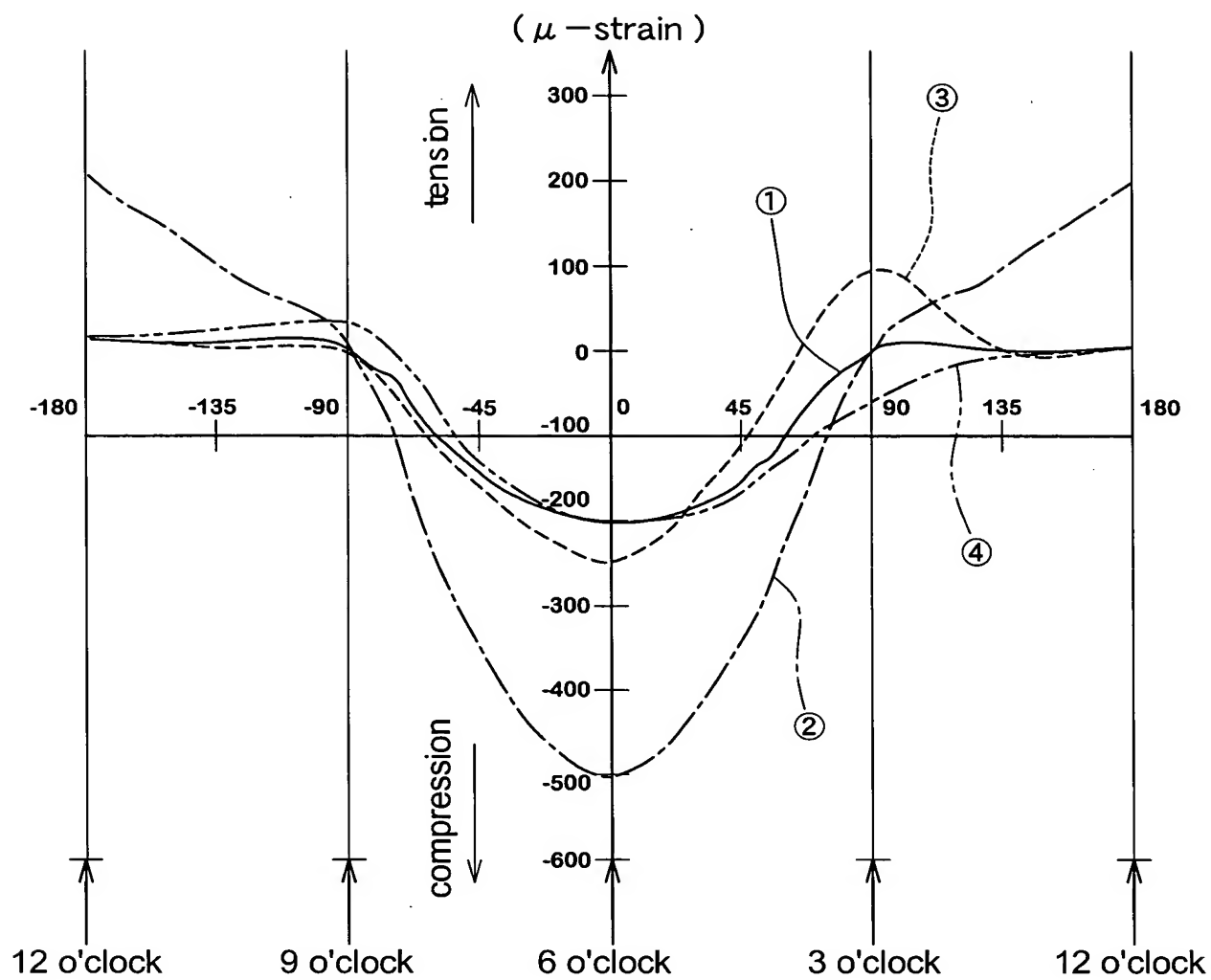


FIG.4

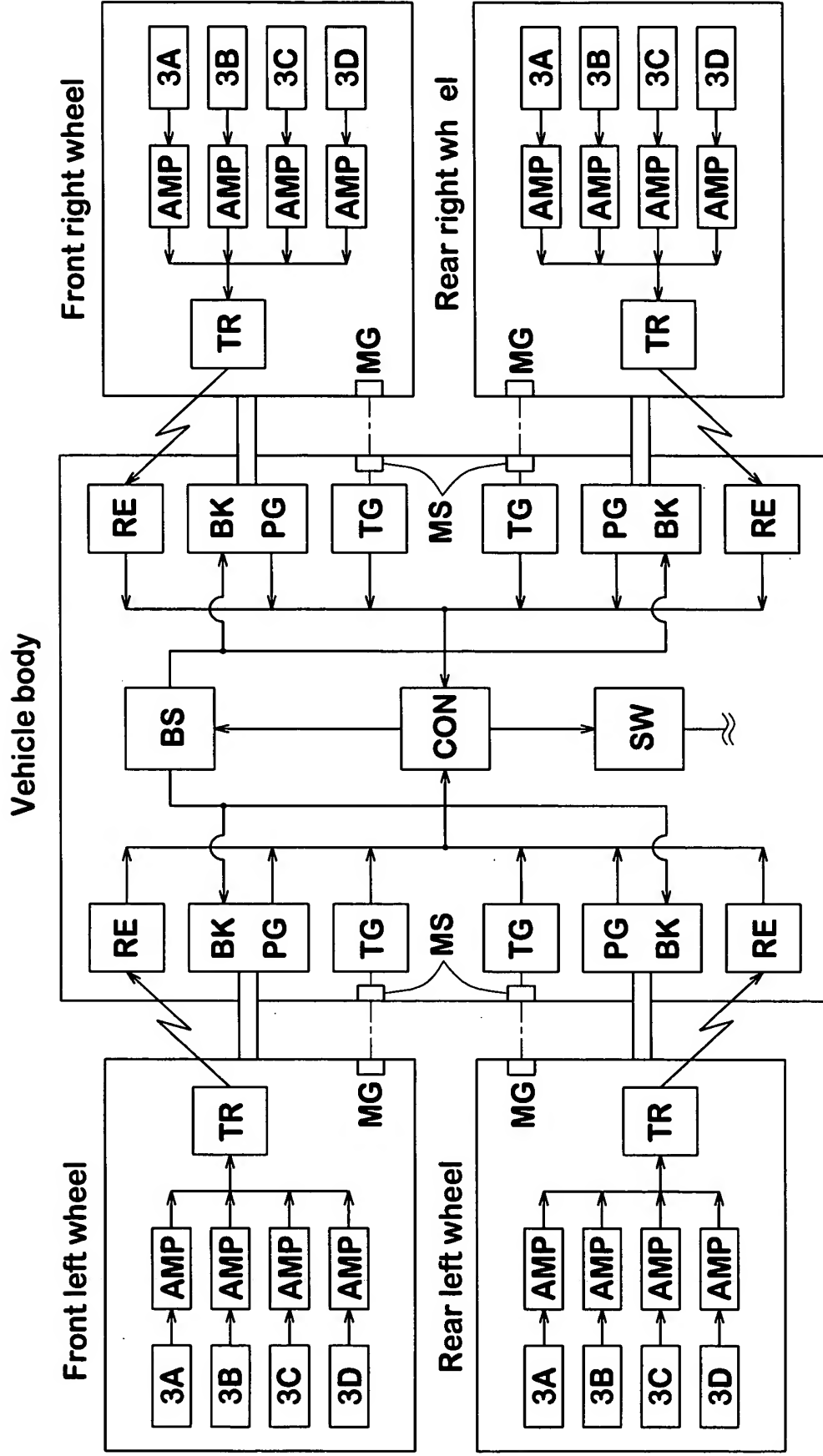


FIG.5

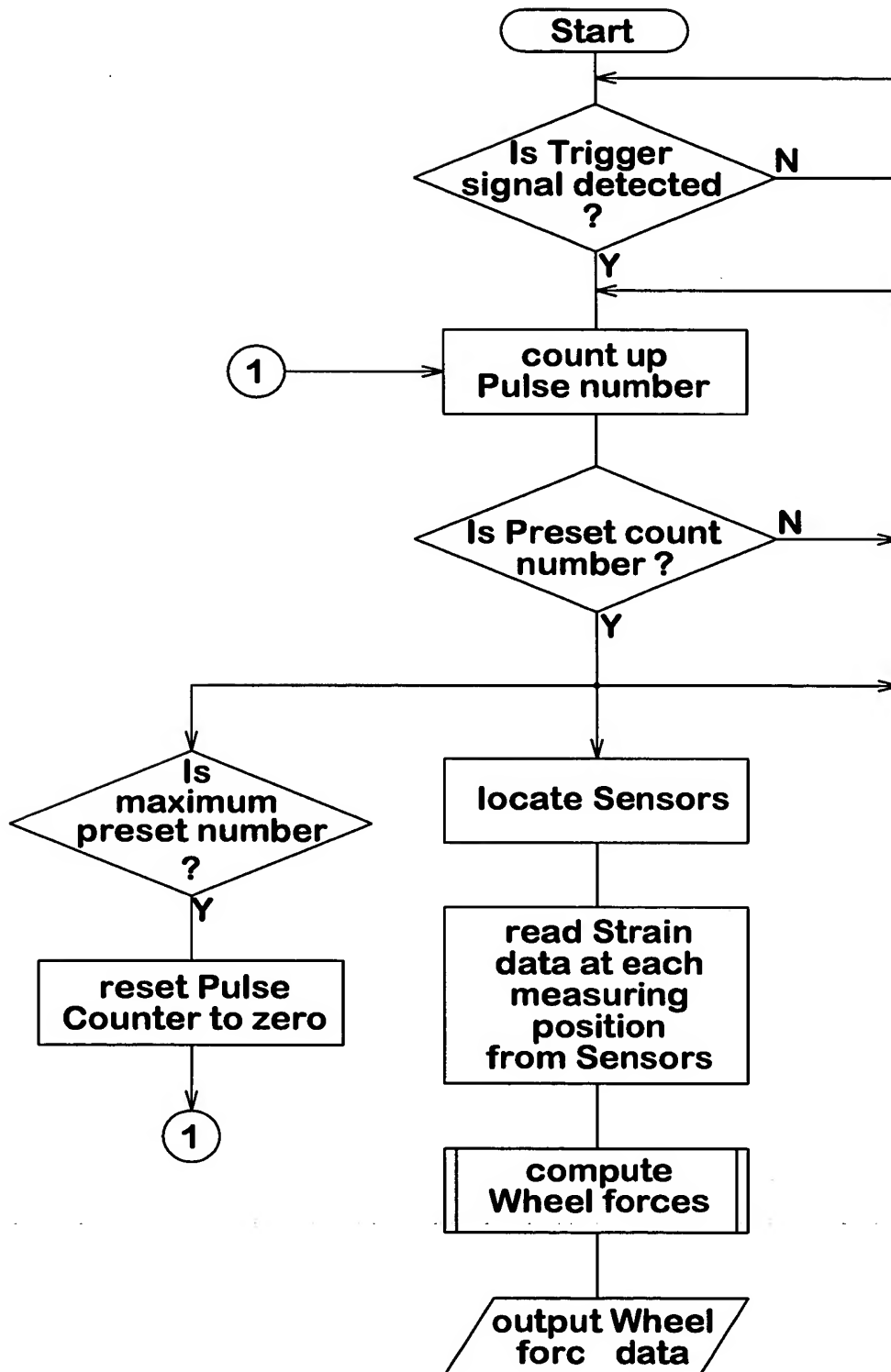


FIG.6

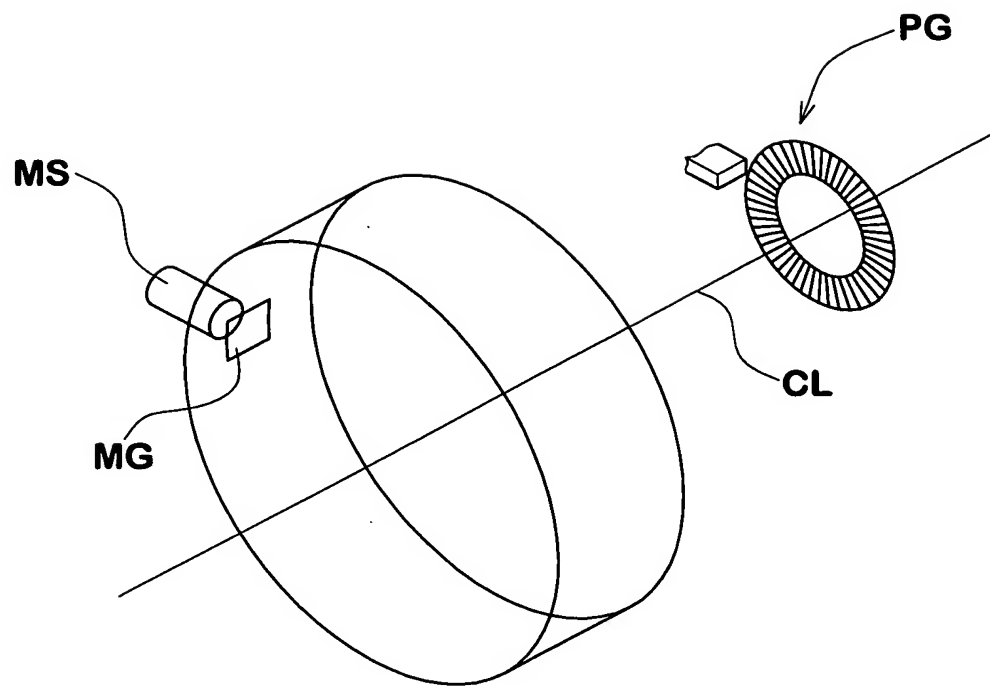


FIG.7

